CLAIMS

What is claimed is:

1. A beam alignment system, comprising:

a signal detector in a path of a beam carrying a traffic signal having a first wavelength and an alignment signal having a second wavelength that allows a signal having the first wavelength to be transmitted, the signal detector taking an intensity measurement of the alignment signal;

a signal alignment unit that compares the intensity measurement of the alignment signal to determine whether the alignment signal is aligned on the signal detector; and

a signal director that adjusts the path of the beam on the signal detector in response to the determination of the signal alignment unit.

2. The beam alignment system of claim 1, further comprising a collimator unit that collimates the beam.

3. The beam alignment system of claim 1, wherein the signal detector is a focusing lens that focuses the traffic signal onto an optical cable.

4. The beam alignment system of claim 1, further comprising a focusing lens that focuses the traffic signal onto an optical cable.

5. The beam alignment system of claim 3, wherein the signal detector and the optical cable are positioned such that when the alignment signal is aligned on the signal detector the traffic signal is aligned with a core of the optical cable

6. The beam alignment system of claim 1, wherein the signal detector comprises a plurality of sensors that take intensity measurements of the alignment signal at a plurality of positions on the signal detector.

7. The beam alignment system of claim 6, wherein the signal detector comprises a quadrature detector

8. The beam alignment system of claim 1, wherein the signal director comprises micro-electromechanical systems (MEMS).

9. The beam alignment system of claim 1, wherein the signal detector transmits signals having wavelengths greater than 1300 nanometers.

10. The beam alignment system of claim 1, wherein the detector comprises Si.

11. The beam alignment system of claim 1, wherein the detector comprises InP .

12. The beam alignment system of claim 1, wherein the detector comprises GaP.

13. The beam alignment signal of claim 1, wherein the detector comprises GaAs.

14. The beam alignment system of claim 1, further comprising an alignment signal generator that generates the alignment signal.

15. The beam alignment system of claim 14, wherein the alignment signal is encoded with a pilot tone to aids in connection verification.

16. The beam alignment signal of claim 1, further comprising a signal coupler that couples the alignment signal and the traffic signal onto the beam.

17. A beam alignment system, comprising:

a signal detector that absorbs a portion of a traffic signal, the signal detector taking an intensity measurement of the portion of the traffic signal;

a signal alignment unit that compares the intensity measurement to determine whether the traffic signal is aligned on the signal detector; and

a signal director that adjusts the path of the traffic signal on the signal detector in response to the determination of the signal alignment unit.

18. The beam alignment system of claim 17, wherein the signal detector is a focusing lens that focuses the traffic signal onto an optical cable.

19. The beam alignment system of claim 17, further comprising a focusing lens that focuses the traffic signal onto an optical cable.

20. The beam alignment system of claim 18, wherein the signal detector and the optical cable are positioned such that when the traffic signal is aligned on the signal detector the traffic signal is aligned with a core on in the optical cable.

21. The beam alignment system of claim 17, wherein the signal detector comprises a plurality of sensors that take intensity measurements of the traffic signal at a plurality of positions on the signal detector.

22. The beam alignment system of claim 21, wherein the signal detector comprises a quadrature detector.

23. The beam alignment system of claim 17, wherein the signal director comprises micro-electromechanical systems (MEMS).

24. The beam alignment system of claim 17, wherein the detector comprises Si.

25. The beam alignment system of claim 17, wherein the detector comprises InP.

26. The beam alignment system of claim 17, wherein the detector comprises GaP.

27. The beam alignment system of claim 17, wherein the detector comprises GaAs.

28. A method for managing a traffic signal, comprising:

transmitting a beam carrying the traffic signal having a first wavelength and an alignment signal having a second wavelength to a signal detector that transmits signals having the first wavelength;

obtaining intensity measurements of the alignment signal on the signal detector;

determining whether the alignment signal is aligned with the signal detector in response to the intensity measurements;

adjusting a path of the beam to the signal detector in response to the determination; and verifying connection via pilot tone.

29. The method of claim 28, further comprising:

generating the alignment signal; and

coupling the traffic signal with the alignment signal onto the beam.

30. The method of claim 28, further comprising collimating the beam before transmitting the beam.

31. The method of claim 28, wherein transmitting the beam to the signal detector comprises directing the beam with a plurality of micro-electromechanical systems (MEMS).

32. The method of claim 28, wherein obtaining measurements of the alignment signal comprises measuring the alignment signal at a plurality of locations where the alignment signal is incident on the signal detector.

33. The method of claim 28, wherein determining whether the alignment signal is aligned with the signal detector in response to the intensity measurements comprises comparing the intensity measurements with previous intensity measurements taken of an aligned alignment signal.

34. The method of claim 31, wherein adjusting the path of the beam comprises adjusting the positions of the MEMs.

35. A method for managing a traffic signal, comprising:

transmitting a beam carrying the traffic signal having a first wavelength to a signal detector that transmits signals having the first wavelength;

obtaining intensity measurements of the traffic signal on the signal detector;

determining whether the traffic signal is aligned with the signal detector in response to the intensity measurements; and

adjusting a path of the beam to the signal detector in response to the determination.

36. The method of claim 35, wherein transmitting the beam to the signal detector comprises directing the beam with a plurality of micro-electromechanical systems (MEMS).

37. The method of claim 35, wherein obtaining measurements of the traffic signal comprises measuring the traffic signal at a plurality of locations where the traffic signal is incident on the signal detector.

38. The method of claim 35, wherein determining whether the traffic signal is aligned with the signal detector in response to the intensity measurements comprises comparing the intensity measurements with previous intensity measurements taken of an aligned traffic signal.

39. The method of claim 36, wherein adjusting the path of the beam comprises adjusting the positions of the MEMS.

40. A method for managing a traffic signal, comprising:

transmitting a first beam carrying an alignment signal having a first wavelength to a signal detector that transmits signals having a second wavelength;

obtaining intensity measurements of the alignment signal on the signal detector;

determining whether the alignment signal is aligned with the signal detector in response to the intensity measurements;

adjusting a path of the first beam to the signal detector in response to the determination; and

transmitting a second beam carrying the traffic signal having a second wavelength and the alignment signal having the first wavelength to the signal detector.

41. The method of claim 40, further comprising using beam encoding to aid in connection verification.

42. The method of claim 41, wherein using beam encoding comprises using pilot tones.